

Borehole

51-01-06

Log Event A

Borehole Information

Farm : <u>TX</u>	Tank : <u>TX-101</u>	Site Number : <u>299-W15-168</u>
N-Coord : <u>41,603</u>	W-Coord : <u>75,750</u>	TOC Elevation : <u>672.45</u>
Water Level, ft :	Date Drilled : <u>4/30/1974</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>100</u>	

Borehole Notes:

According to the driller's records, this borehole was not perforated or grouted. The casing thickness is presumed to be 0.280 in., on the basis of published thickness for schedule-40, 6-in. steel tubing.

Equipment Information

Logging System : <u>1</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>10/1995</u>	Calibration Reference : <u>GJPO-HAN-3</u>	Logging Procedure : <u>P-GJPO-1783</u>

Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>12/28/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>99.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>45.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>12/29/1995</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>46.5</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Spectral Gamma-Ray Borehole
Log Data Report

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Analysis Information

Analyst : P.D. Henwood

Data Processing Reference : P-GJPO-1787

Analysis Date : 8/12/1996

Analysis Notes :

This borehole was logged by the SGLS in two logging runs. The pre-survey field verification spectra did not pass the acceptance criteria established for the peak shape and system efficiency. A Nonconformance Report issued in August 1996 (N-96-05) identified this failure to be caused by a power supply malfunction that resulted in a low detector bias voltage being supplied to the detector. This problem occurred during the mornings because of inadequate system warm-up time. The report also documented the concentrations calculated from data collected in the first 2 hours of logging could be systematically underestimated by about 10 percent. Therefore, the data from 99 to 63 ft for log run 1 and from 0 to 36 ft for log run 2 may show a repeatability problem upon relogging.

The post-survey field verification spectra passed the acceptance criteria, providing evidence the logging system was operating appropriately after an initial warm-up time. Corrections for gain drifts during data collection were not necessary during processing of the data to maintain proper peak identification. The energy calibration and peak-shape calibration from the post-survey verification spectrum were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

The SGLS data was processed using a casing-correction factor for 0.280-in.-thick steel casing.

Depth overlaps, where data were collected by separate logging runs over the same depth interval, occurred in this borehole between depths of 45.5 and 46.5 ft. The concentrations of the natural radionuclides (K-40, U-238, and Th-232) were calculated using both the original and repeated log data sets at the overlapping points. The calculated concentrations of these isotopes using the separate data sets were within the statistical uncertainty of the measurements, indicating very good repeatability of the radionuclide concentration measurements.

Cs-137 and processed U-235 were the only man-made radionuclides identified in this borehole. The presence of Cs-137 was measured almost continuously from the ground surface to about 42 ft and at a few other locations, including the bottom of the borehole. The maximum Cs-137 concentration of about 4 pCi/g was measured at ground level.

A processed U-235 concentration of about 2 pCi/g was identified at 77.5 ft. Although this contamination is represented by only one data point, it is corroborated by U-235 contamination at the same depth in borehole 51-01-08.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank TX-101.

Log Plot Notes:

Separate log plots show the man-made (e.g., Cs-137) and the naturally occurring radionuclides (e.g., K-40, U-238, and Th-232). The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.



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A combination plot includes both the man-made and natural radionuclides, in addition to the total gamma derived from the spectral data and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.